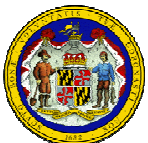




Childhood Blood Lead Surveillance in Maryland

Annual Report 2011

Lead Poisoning Prevention Program



MARYLAND DEPARTMENT OF THE ENVIRONMENT
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MARYLAND CHILDHOOD LEAD REGISTRY

ANNUAL SURVEILLANCE REPORT 2011

EXECUTIVE SUMMARY

The Maryland Department of the Environment's statewide Childhood Lead Registry (CLR) performs childhood blood lead surveillance for Maryland. The CLR receives the reports of all blood lead tests done on Maryland children 0-18 years of age, and the CLR provides blood lead test results to the Department of Health and Mental Hygiene including Medicaid and local health departments as needed for case management and planning.

Since 1995, the CLR has released a comprehensive annual report on statewide childhood blood lead testing. This current report presents the childhood blood lead test results for calendar year (CY) 2011. All numbers are based on blood lead testing (venous or capillary) on children. The CLR does not receive any reports on lead screening based on the lead risk assessment questionnaire. With few exceptions all numbers referred to children 0-72 months of age.

Maryland CY 2011 Surveillance Highlights:

- In 2011 a total of 126,554 blood lead tests from 121,524 children 0-18 years were received and processed by the CLR, of which 114,121 tests were from 109,534 children 0-72 months.
- Of those 109,534 children, 452 (0.4%) were identified with a blood lead level ≥ 10 $\mu\text{g/dL}$ (prevalence). Of those 452 children 342 were identified with their first venous or capillary blood lead level ≥ 10 $\mu\text{g/dL}$ (incidence).
- Of the 342 incident cases statewide, a total of 292 met the criteria for medical and environmental case management. There were a total of 130 incident cases in Baltimore City and a total of 162 incident cases in the remaining Maryland Counties.
- The highest testing rates for children 0-72 months were found in jurisdictions that require testing of all children at age 1 and 2 years. These include: Baltimore City (34.2%) Somerset County (31.5%), Allegany County (28.5%), and Worcester County (26.6%).
- The testing rate statewide for children 0-72 months was 21.9%. Not all children in Maryland are required to be blood lead tested. Based on Maryland's "Targeting Plan for Areas at Risk for Childhood Lead Poisoning", children are required to have a blood lead test at ages 1 and 2 years if they meet any of the following criteria; (a) Live in an identified "at-risk" zip code, (b) Participate in Maryland's "Medicaid" EPSTD Program, (c) Positive response to "Risk Assessment Questionnaire" conducted on children up to age six years of age, as required.
- In Baltimore City, 130 children with the first venous blood lead level ≥ 10 $\mu\text{g/dL}$ received medical and environmental case management. In approximately 82 (63%) of

these cases children were living in a pre-1950 residential rental dwelling “Affected Property”. In the remaining 48 cases, 6 (5%) children were living in a post 1949 residential rental dwelling and 42 (32%) were living in owner occupied properties (“Non-Affected”).

- In Maryland Counties, 162 children with the first venous blood lead level $\geq 10 \mu\text{g/dL}$ received medical and environmental case management. In approximately 34 (21%) of these cases children were living in a pre-1950 residential rental dwelling (“Affected Property”). In the remaining 128 cases, 66 (41%) children were living in a post 1949 residential rental dwelling and 62 (38%) were living in owner occupied properties (“Non-Affected”).
- In 2011, CLR received blood lead reports from 36 laboratories nationwide. Number of reports for the whole year varied from as low as 2 from one laboratory to more than 68,000 from another laboratory. More than 85% of reports however are from three major laboratories. These and five other laboratories sent their reports electronically (91.3%). The average reporting time, from the time sample is drawn to the time the result enters the CLR database is about 6 days. The average time for elevated blood lead results ($\geq 10 \mu\text{g/dL}$) is approximately 30 hours.

News for 2011

Exposure to lead is still the most significant and widespread environmental hazards for children in Maryland. Children are at the greatest risk from birth to age six while their neurological systems are being developed. Exposure to lead can cause long-term neurological damage that may be associated with learning and behavioral problems and with decreased intelligence.

There is no evidence of a blood lead level below which there are no health effects. The Centers for Disease Control and Prevention (CDC) concurs that the evidence shows that there is no threshold level for blood lead that can be considered “safe”. Since 1990 CDC maintained the blood lead level of $10\mu\text{g/dL}$ as level of concern.

In March 2012, based on recommendation of the CDC’s Advisory Committee on Childhood Lead Poisoning Prevention, CDC dropped the concept of a blood lead level of $10\mu\text{g/dL}$ as the “Level of Concern” and adopts the blood lead level of $5\mu\text{g/dL}$ as the new “Reference Level”. The new criteria is based on NHANES data which shows 97.5% of children aged 1-5 years have blood lead level at or below $5 \mu\text{g/dL}$. CDC will update the “Reference Value” every four years based on the most recent population-based-blood-surveys conducted among children.

- See Appendix C for a breakdown by jurisdiction on the number of children tested for the first time in 2011 with a blood lead level between 5-9 $\mu\text{g/dL}$.

Sources of Childhood Lead Exposure

Lead paint dust from deteriorated lead paint or from renovation is the major source of exposure for children in Maryland. Out of estimated of 2,127,439 occupied residential houses in Maryland 358,068 (16.8%) were built before 1950 and 853,743 (40.1%) between 1950-1979. (Source: US Census Bureau, 2010 American Community Survey, 1-Year Estimates) A significant number of pre-1950 and 1950-1979 residential rental units have been made lead free. Untreated units in those groupings are highly likely and likely to have lead based paint respectively.

Water, air, and soil, may provide low-level, “background” exposure, but rarely may cause childhood lead poisoning.

Imported products. parental

Primary Prevention Efforts

House Bill 644: Reducing the Incidence of Lead Poisoning

In May of 2012, Governor Martin O'Malley signed House Bill 644 that was passed during the 2012 legislative session in Maryland. House Bill 644 was introduced in response to a report of findings of a study group designed to evaluate processes to further reduce the incidence of lead poisoning in Maryland. House Bill 644 has various components that relate to lead poisoning. The bill amends provisions of the Environment Article, Title 6, Subtitle 8, Reduction of Lead Risk in Housing Act ("Act) as well as Title 6, Subtitle 10, Accreditation of Lead Paint Abatement Services. Below is an overview of the components of HB 644 targeted at primary prevention HB 644:

- Expanding the Definition of Affected Property
The initial portion of HB 644 seeks to further reduce the incidence of childhood lead poisoning in Maryland by expanding the universe of Affected Properties under the Act to also include residential rental dwelling units built 1950-1978. Because the residential use of lead based paint was not banned until 1978, the bill seeks to expand the primary prevention aspects of the Act that previously only mandated compliance for rental dwelling units built prior to 1950. Phase in-compliance will go into affect January 1, 2015.
- Issuance of Abatement Orders
This portion of HB 644 provides the Department, health departments or other local jurisdictions the authority to order abatements in response to an investigation report of a lead poisoned person at risk. Abatements may be ordered in any residential building, including owner-occupied, rentals, child care facilities or pre-school facilities. The Department may enforce the provisions of the order. This becomes effective on June 1, 2012.
- Federal Renovation Rule
The remaining portion of HB 644 amends the Environment Article Title 6, Subtitle 10, Accreditation of Lead Paint Abatement Services, to expand the definition of Abatement to include renovation, repair and painting (RRP) of lead-containing substances in a residential, public or commercial building built before 1978. It also gives the Department the authority to adopt regulations to carry out the provisions, including the accreditation of lead paint contractors and inspectors. This becomes effective on June 1, 2012. The Department will have to seek authorization from the EPA in order to enforce the RRP.

Statistical Report

In calendar year 2011, a total of 114,121 children 0-72 months were tested for lead exposure statewide. Table One provides a summary of statewide statistics of blood lead testing in 2011.

**Table One
Calendar Year (CY) 2011 Statistical Report¹**

Item	Number	Percent (%)
All Children		
Number of tests	126,554	
Number of children	121,524	
Children 0-72 Months		
Number of tests	114,121	
Number of children	109,534	100.0
Age		
Under One	11,128	10.2
One Year	36,854	33.6
Two Years	29,774	27.2
Three Years	11,934	10.9
Four Years	11,822	10.8
Five Years	8,022	7.3
Sex		
Female	53,411	48.8
Male	55,601	50.8
Undetermined	522	0.4
Highest Blood Lead Level (µg/dL)		
≤4	106,342	97.1
5-9	2,740	2.5
10-14	267	0.2
15-19	95	0.1
≥20	90	0.1
Mean BLL (Geometric mean)	1.44	
Blood Specimen		
Capillary	16,842	15.4
Venous	79,205	72.3
Undetermined ²	13,487	12.3

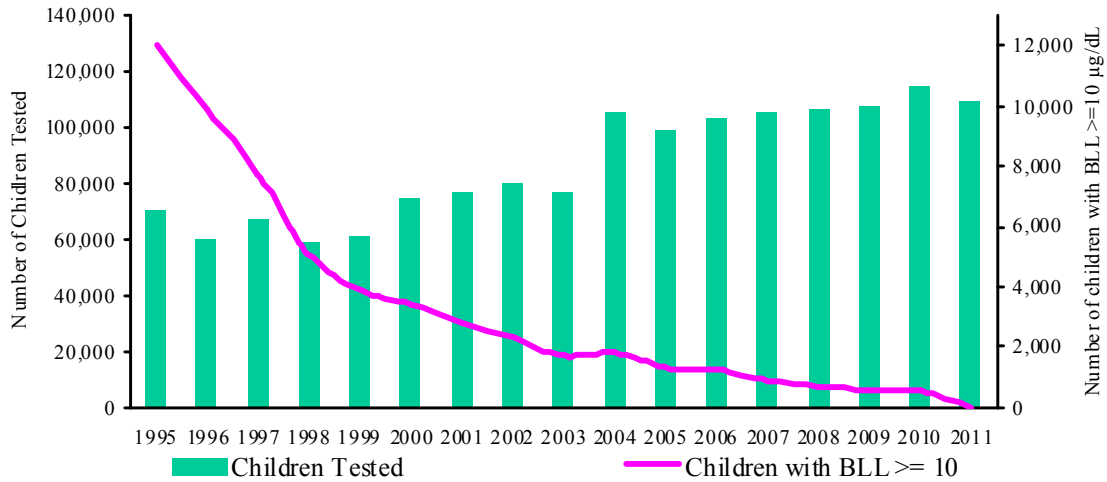
1. For detailed analysis and breakdown of numbers refer to Supplementary Data Tables 1-5.

2. In supplementary data tables blood tests with sample type unknown were counted as capillary.

Figure One
Number of Children 0-72 Months Tested for Lead and Number Reported to Have Blood Lead Level $\geq 10 \mu\text{g/dL}$: 1995-2011

Findings

Childhood lead exposure further declined, both in the extent and the severity from 2010 to 2011 (Figures One & Two).



* See Appendix D for more detailed chart

Figure Two
Blood Lead Distribution of Children 0-72 Months Tested for Lead in 2010 and 2011

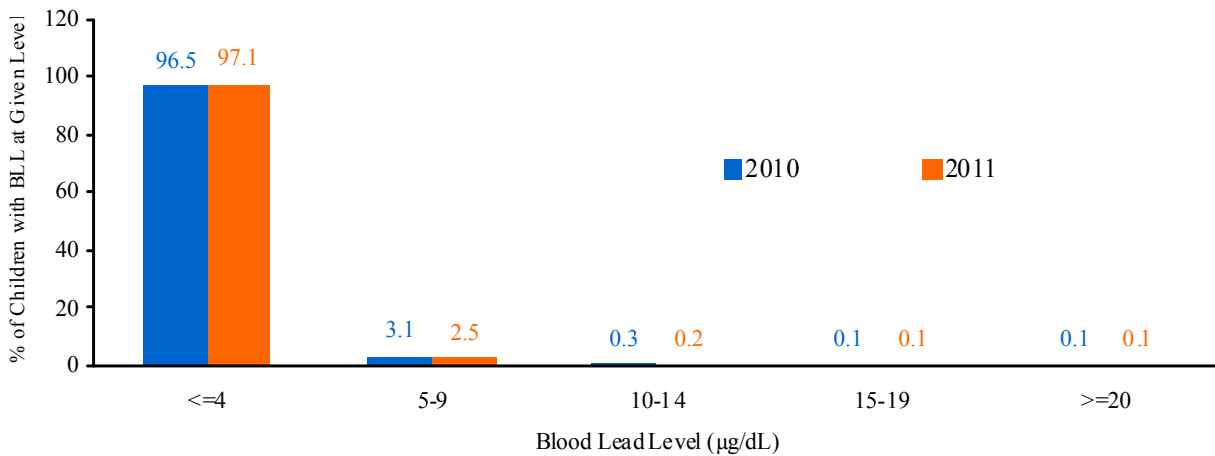


Table Two provides the breakdown of blood lead testing and the status of children with respect to lead exposure by jurisdiction in 2011.

**Table Two
Blood Lead Testing of Children 0-72 Months by Jurisdiction in 2011**

County	Population of Children ¹	Children Tested		Number of Children with Blood Lead Level ≥ 10 $\mu\text{g/dL}$					
				Old Cases ²		New (Incident) Cases ³		Total (Prevalent) Cases ⁴	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Allegany	4,766	1,359	28.5	4	0.3	5	0.4	9	0.7
Anne Arundel	47,391	8,162	17.2	1	0.0	7	0.1	8	0.1
Baltimore	66,014	16,375	24.8	7	0.0	19	0.1	26	0.2
Baltimore City	55,681	19,049	34.2	76	0.4	182	1.0	258	1.4
Calvert	7,030	778	11.1	0	0.0	0	0.0	0	0.0
Caroline	3,176	751	23.6	1	0.1	3	0.4	4	0.5
Carroll	12,811	1,287	10.0	3	0.2	11	0.9	14	1.1
Cecil	8,884	1,132	12.7	0	0.0	1	0.1	1	0.1
Charles	13,015	1,904	14.6	0	0.0	1	0.1	1	0.1
Dorchester	2,747	681	24.8	1	0.1	0	0.0	1	0.1
Frederick	20,597	3,241	15.7	5	0.2	7	0.2	12	0.4
Garrett	2,185	438	20.0	0	0.0	3	0.7	3	0.7
Harford	20,720	2,970	14.3	0	0.0	5	0.2	5	0.2
Howard	24,261	2,558	10.5	1	0.0	6	0.2	7	0.3
Kent	1,380	266	19.3	0	0.0	1	0.4	1	0.4
Montgomery	87,595	19,843	22.7	4	0.0	32	0.2	36	0.2
Prince George's	79,810	19,672	24.6	2	0.0	37	0.2	39	0.2
Queen Anne's	3,798	475	12.5	0	0.0	2	0.4	2	0.4
Saint Mary's	10,427	1,602	15.4	0	0.0	0	0.0	0	0.0
Somerset	1,742	549	31.5	1	0.2	1	0.2	2	0.4
Talbot	2,600	655	25.2	1	0.2	3	0.5	4	0.6
Washington	12,462	2,691	21.6	2	0.1	10	0.4	12	0.4
Wicomico	8,427	2,215	26.3	1	0.0	4	0.2	5	0.2
Worcester	3,182	877	27.6	0	0.0	2	0.2	2	0.2
County Unknown		4		0		0		0	
Total	500,702	109,534	21.9	110	0.1	342	0.3	452	0.4

1. Adapted from Maryland census population 2010, provided by the Maryland Data Center, Maryland Department of Planning, www.planning.maryland.gov/msdc.
2. Children with a history of an EBL (blood lead level ≥ 10 $\mu\text{g/dL}$). These children may have carried over from 2010 or had an EBL test in previous years.
3. Children with the very first EBL in 2011. These children were either not tested in the past or their blood lead levels were below 10 $\mu\text{g/dL}$. This definition may not necessarily match the criteria for the initiation of case management.
4. All children with at least one blood lead test ≥ 10 $\mu\text{g/dL}$ in 2011. The selection is based on the highest venous or the highest capillary in the absence of any venous test.
5. Of the 342 New Cases, 292 met the criteria for medical and environmental case management.

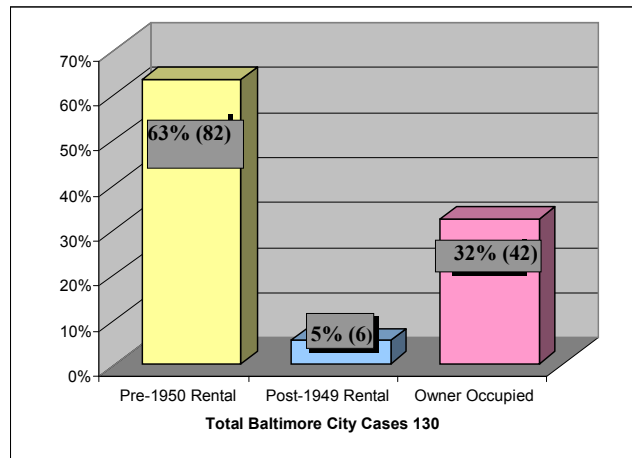
Appendix A provides breakdown of blood lead testing and the status of children by age groups of 0-35 and 36-72 months, and by jurisdiction. Appendix B provides summary results for the past eight (8) years at the State, Baltimore City and Counties levels. For detailed breakdown of blood lead data the reader is referred to supplementary data tables: Supplements 1-5.

Statewide activities to reduce (eliminate) childhood lead poisoning

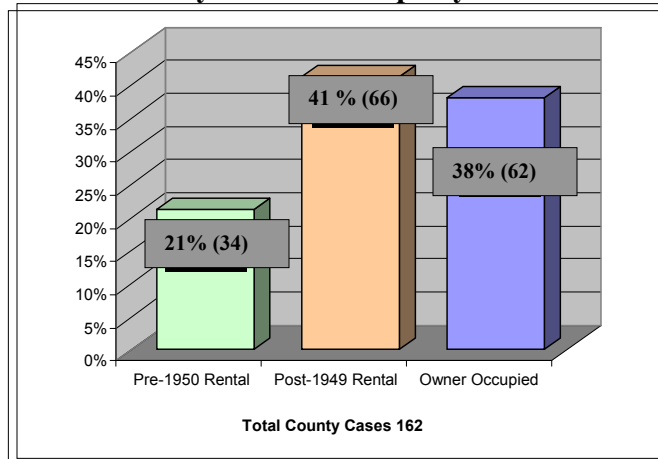
The State Elimination Plan calls for zero new cases of EBL. The plan focuses on primary prevention (removal and elimination of lead hazards prior to child access) while maintaining well-established secondary prevention (identifying children who may be at risk of lead exposure) and tertiary prevention (case management of children exposed to lead) efforts in the state.

Primary Prevention: Much of the decline in blood lead levels is the result of implementation and enforcement of Maryland’s “Reduction of Lead Risk in Housing Act” (Act). The Act requires owners of pre-1950 rental dwelling units (Affected Properties) to reduce the potential for child exposure to lead paint hazards by performing specific lead risk reduction treatments prior to each change in tenancy. The State Elimination Plan 2010 called for zero new cases of EBL. Though the percentage of children with elevated blood lead levels is consistently lowering in Maryland, there still remains new case incidence. There also continues to be reduction in children identified with blood lead levels in compliant Affected Properties that have meet the required risk reduction standard required at change in tenancy.

Figure Three
Percent of Children 0-72 Months with Blood Lead Level $\geq 10 \mu\text{g/dL}$ in 2011 and Age of the Housing Baltimore City CY 2011 Property Status



County CY 2011 Property Status

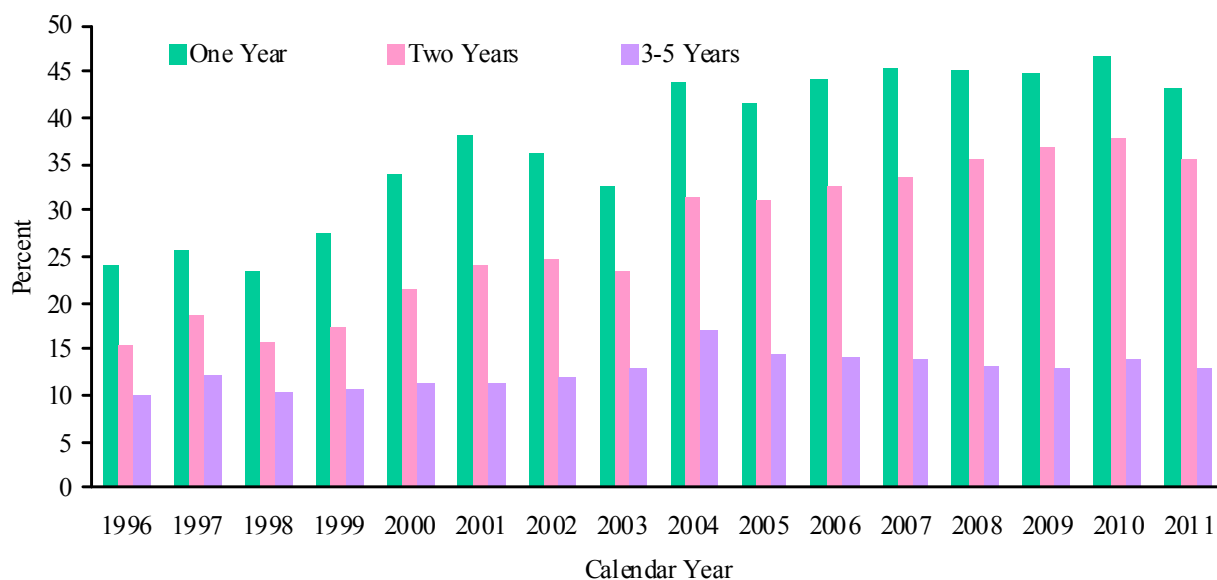


State laws and regulations with impact on childhood lead poisoning

- ✓ Requirements to perform lead hazard reduction at each turnover in rental housing built before 1950. [Environment Article (EA) §6-8]
- ✓ Outreach programs to parents, health care providers, and property owners, especially in at-risk areas. [EA§ 6-8, Health Article §18-106]
- ✓ The Department, health departments or other local jurisdictions effective June 1, 2012 have the authority to order abatements in response to an investigation report of a lead poisoned person at risk.

Secondary Prevention: The second element of the Elimination Plan is to identify children who may be at risk of lead exposure. In particular, children ages one and two years are more likely to be exposed to lead because of their hand to mouth behavior. Maryland requires that children at ages one and two years who are enrolled in the Medicaid, Early Periodic Screening, Diagnosis, and Treatment (EPSDT) Program or who currently live or have ever lived in one of Maryland's "at-risk" zip codes identified by the "Targeting Plan" should be tested. The percentage of one and two year old children tested for lead has increased substantially since 2004 (Figure Four).

Figure Four
Percent of Children One and Two Years Old Tested for Lead vs. Children of Other Ages



units are more likely to be exposed to lead than children living in other areas. State has a targeted plan that identifies "At-Risk" areas. Universal blood lead testing applies to Baltimore City children (City Ordinance 20 effective July 2000). Table Three presents blood lead testing in the At-risk and Not At-risk areas of the state. At-risk area includes Baltimore City, Allegany, Caroline, Dorchester, Frederick, Garrett, Somerset, Washington, Wicomico, and Worcester counties.

**Table Three
Blood Lead Testing in At-Risk and Not At-Risk areas in 2011**

Area	Population	Children Tested		Children with BLL ≥ 10 $\mu\text{g}/\text{dL}$		Status of Cases of EBL			
		Number	Percent	Number	Percent	Old Cases		New Cases	
						Number	Percent	Number	Percent
At-Risk	114,966	31,855	27.7	308	1.0	91	0.3	217	0.7
Not At-Risk	385,736	77,679	20.1	144	0.2	19	0.0	125	0.2
Statewide	500,702	109,534	21.9	452	0.4	110	0.1	342	0.3

Another at risk population for lead poisoning is children enrolled in Maryland’s Medical Assistance Program. MDE provides childhood blood lead data to the Maryland Department of Health and Mental Hygiene, Office of Medicaid Administration (DHMH), on a quarterly and annual basis to be matched with a list of children enlisted in the states Medical Assistance Program. Based on data provided, DHMH prepares and distributes an annual report of blood lead testing of children under Maryland’s Medicaid Program.

Identifying Children with Lead Exposure

The main goal in preventing childhood lead poisoning is to limit exposure. However, early detection is crucial when a child is identified with an elevated blood lead level. Because there are no specific clinical symptoms, a blood lead test is the most reliable technique to identify children with elevated blood lead levels.

Tertiary Prevention: Maryland’s Lead Poisoning Prevention Program has well-established case management guidelines and environmental investigation protocols for follow-up of children with elevated blood lead level. A venous blood lead test ≥ 10 $\mu\text{g}/\text{dL}$ initiates case management and an environmental investigation. Currently, one venous or two capillary blood lead tests ≥ 10 $\mu\text{g}/\text{dL}$ triggers the Notice of Elevated Blood Lead Level (Notice of EBL) to be sent to the owner of a Pre-1950 residential dwelling unit (Affected Property). Under the “Reduction of Lead Risk in Housing Act” (Act), an owner who receives a Notice of Elevated Blood Lead Level is required to perform specific lead risk reduction treatments to limit further exposure to a child. Furthermore, effective June 1, 2012 the Department, health departments or other local jurisdictions have the authority to order abatements in response to an investigation report of a lead poisoned person at risk. Tables Four and Five outline the State’s protocol for diagnostic and follow up blood lead testing.

Table Four
Blood Lead Diagnostic and Follow-Up: Confirmation of a Capillary Blood Lead Test

BLL (µg/dL)	Confirm with venous blood lead test within
≤9	Routine blood lead test according to protocol
10 –19	3 months
20 – 44	1 week to 1 month*
45 – 59	48 hours
60-69	24 hours
≥70	Immediately as an emergency lab test

* The higher the BLL, the more urgent the need for confirmatory testing.

Table Five
Blood Lead Diagnostic and Follow-Up: Follow-Up for Venous Blood Lead Testing¹

BLL (µg/dL) Venous	Early follow-up(First 2-4 tests after identification)	Late follow-up (After BLL begins to decline)
≤9	Routine blood lead test according to protocol	
10 - 14	3 months ²	6 – 9 months
15 - 19	1 - 3 months ²	3 – 6 months
20 - 24	1 - 3 months ²	1 – 3 months
25 - 44	2 weeks – 1 month	1 month
≥45	As soon as possible	Chelation with subsequent follow-up

1. Seasonal variation of BLLs exists and may be more apparent in colder climate areas. Greater exposure in the summer months may necessitate more frequent follow-up.
2. Some case managers or health care providers may choose to repeat blood lead tests on all new patients within a month to ensure that their BLL level is not rising more quickly than anticipated.

Tables adapted from: *Centers for Disease Control and Prevention. Managing Elevated Blood Lead Levels Among Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention. Atlanta: CDC, 2002.*

Educational Burden of Childhood Lead Exposure

Childhood lead exposure at early ages (before 3 years of age) may adversely affect children’s neurobehavioral development and as such their later educational achievements. The effect may not show up until the child enters school (kindergarten). Table Six presents the extent of history of EBL among children who were tested for lead and would be at kindergarten age on September 1, 2012.

**Table Six
Blood Lead Testing, and Childhood Lead Exposure of Kindergarten Population**

Children who would be 5 to 6 years old (kindergarten age) on September 1, 2012 and were tested for lead and had BLL ≥ 10 $\mu\text{g/dL}$			
	Children	Children with EBL	
	Tested	Number	Percent
Allegany	741	7	0.9
Anne Arundel	4,989	6	0.1
Baltimore	12,608	33	0.3
Baltimore City	15,365	143	0.9
Calvert	585		0.0
Caroline	517	2	0.4
Carroll	986	8	0.8
Cecil	923	3	0.3
Charles	1,373		0.0
Dorchester	454	3	0.7
Frederick	2,488	12	0.5
Garrett	318	1	0.3
Harford	2,147	3	0.1
Howard	1,633	1	0.1
Kent	198	1	0.5
Montgomery	11,918	30	0.3
Prince George's	12,278	31	0.3
Queen Anne's	378	2	0.5
Saint Mary's	1,121	1	0.1
Somerset	297		0.0
Talbot	368	4	1.1
Washington	1,780	10	0.6
Wicomico	1,491	4	0.3
Worcester	530	3	0.6
County Unknown	65	1	1.5
Statewide	75,551	309	0.4

Data Quality

The CLR is maintained in the “Systematic Tracking of Elevated Lead Levels and Remediation” (STELLAR) surveillance system, obtained from CDC Lead Poisoning Prevention Program. CLR staff makes all efforts to further improve data quality with respect to completeness, timeliness, and accuracy. Staff keep daily track of laboratory reporting to make sure laboratories are reporting all blood lead tests no later than biweekly. The law requires blood lead results ≥ 20 $\mu\text{g/dL}$ to be reported (fax) within 24 hours after result is known. However, upon CLR request, laboratories agreed to report (fax) the result of all blood lead test ≥ 10 $\mu\text{g/dL}$ within 24 hours. For all blood lead tests ≥ 10 $\mu\text{g/dL}$, staff checks the completeness of data in particular with respect to child’s and guardian’s name, address, and telephone number.

In 2011, more than 90% of blood lead tests were reported to the registry electronically. The average reporting time, from the time sample is drawn to time the result enters the CLR database is approximately 6 days. The average time for elevated blood lead results (≥ 10 $\mu\text{g/dL}$) is approximately 30 hours.

**Table Seven
Completeness of Data for 2010**

ITEM	% Completed
Child’s name ¹	100.0
Date of Birth ¹	100.0
Sex/Gender	99.5
Race	49.6
Guardian’s name	54.0
Sample type	87.7
Blood lead level	100.0
Address (geocoded)	90.0
Telephone Number ²	94.6

1. Reports with missing (wrong) name and/or date of birth are held by the program until they are corrected.
2. Quality control for telephone number started in 2009.

Blood Lead Laboratory Reporting Requirement
 The amended law and regulations* of 2001 and 2002 require that:
 1-The following child’s demographic data should be included in each blood lead test reported:

- Date of Birth
- Sex
- Race
- Address
- Test date
- Sample type
- Blood lead level

2-Blood lead results ≥ 20 $\mu\text{g/dL}$ to be reported (fax) within 24 hours after result is known. All other results to be reported every two weeks.
 3-Reporting format should comply with the format designed and provided by the Registry.
 4-Data should be provided electronically.
 * EA §6-303, Blood lead test reporting (COMAR 26.02.01, Blood lead test reporting)

Migration into New System

The Maryland Department of the Environment has partnered with the Maryland Department of Health and Mental Hygiene in the implementation of CDC’s: “Healthy Homes and Lead Poisoning Surveillance System (HHLPSS)”. Full implementation of the HHLPSS database is expected sometime in December, 2012.

Appendix A
Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in 2011

	Population of Children	Children Tested		Children with Blood Lead Level ≥ 10 $\mu\text{g/dL}$					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
				Number	Percent	Number	Percent	Number	Percent
Allegany County									
0-35 Months	2,409	1,131	46.9	3	0.3	4	0.4	7	0.6
36-72 Months	2,356	228	9.7	1	0.4	1	0.4	2	0.9
Total	4,766	1,359	28.5	4	0.3	5	0.4	9	0.7
Anne Arundel County									
0-35 Months	24,295	5,879	24.2	1	0.0	6	0.1	7	0.1
36-72 Months	23,096	2,283	9.9	0	0.0	1	0.0	1	0.0
Total	47,391	8,162	17.2	1	0.0	7	0.1	8	0.1
Baltimore County									
0-35 Months	33,786	12,583	37.2	2	0.0	17	0.1	19	0.2
36-72 Months	32,228	3,792	11.8	5	0.1	2	0.1	7	0.2
Total	66,014	16,375	24.8	7	0.0	19	0.1	26	0.2
Baltimore City									
0-35 Months	29,933	13,586	45.4	41	0.3	150	1.1	191	1.4
36-72 Months	25,749	5,463	21.2	35	0.6	32	0.6	67	1.2
Total	55,681	19,049	34.2	76	0.4	182	1.0	258	1.4
Calvert County									
0-35 Months	3,362	613	18.2	0	0.0	0	0.0	0	0.0
36-72 Months	3,668	165	4.5	0	0.0	0	0.0	0	0.0
Total	7,030	778	11.1	0	0.0	0	0.0	0	0.0
Caroline County									
0-35 Months	1,571	626	39.8	1	0.2	2	0.3	3	0.5
36-72 Months	1,605	125	7.8	0	0.0	1	0.8	1	0.8
Total	3,176	751	23.6	1	0.1	3	0.4	4	0.5
Carroll County									
0-35 Months	5,993	979	16.3	2	0.2	8	0.8	10	1.0
36-72 Months	6,818	308	4.5	1	0.3	3	1.0	4	1.3
Total	12,811	1,287	10.0	3	0.2	11	0.9	14	1.1
Cecil County									
0-35 Months	4,497	792	17.6	0	0.0	1	0.1	1	0.1
36-72 Months	4,387	340	7.7	0	0.0	0	0.0	0	0.0
Total	8,884	1,132	12.7	0	0.0	1	0.1	1	0.1

Appendix A
Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in 2011

	Population of Children	Children Tested		Children with Blood Lead Level ≥ 10 $\mu\text{g/dL}$					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
				Number	Percent	Number	Percent	Number	Percent
Charles County									
0-35 Months	6,565	1,343	20.5	0	0.0	0	0.0	0	0.0
36-72 Months	6,450	561	8.7	0	0.0	1	0.2	1	0.2
Total	13,015	1,904	14.6	0	0.0	1	0.1	1	0.1
Dorchester County									
0-35 Months	1,438	511	35.5	1	0.2	0	0.0	1	0.2
36-72 Months	1,309	170	13.0	0	0.0	0	0.0	0	0.0
Total	2,747	681	24.8	1	0.1	0	0.0	1	0.1
Frederick County									
0-35 Months	10,094	2,200	21.8	2	0.1	5	0.2	7	0.3
36-72 Months	10,503	1,041	9.9	3	0.3	2	0.2	5	0.5
Total	20,597	3,241	15.7	5	0.2	7	0.2	12	0.4
Garrett County									
0-35 Months	1,054	325	30.8	0	0.0	2	0.6	2	0.6
36-72 Months	1,131	113	10.0	0	0.0	1	0.9	1	0.9
Total	2,185	438	20.0	0	0.0	3	0.7	3	0.7
Harford County									
0-35 Months	10,229	2,096	20.5	0	0.0	3	0.1	3	0.1
36-72 Months	10,490	874	8.3	0	0.0	2	0.2	2	0.2
Total	20,720	2,970	14.3	0	0.0	5	0.2	5	0.2
Howard County									
0-35 Months	11,860	1,706	14.4	1	0.1	5	0.3	6	0.4
36-72 Months	12,401	852	6.9	0	0.0	1	0.1	1	0.1
Total	24,261	2,558	10.5	1	0.0	6	0.2	7	0.3
Kent County									
0-35 Months	694	204	29.4	0	0.0	1	0.5	1	0.5
36-72 Months	686	62	9.0	0	0.0	0	0.0	0	0.0
Total	1,380	266	19.3	0	0.0	1	0.4	1	0.4
Montgomery County									
0-35 Months	44,503	13,741	30.9	0	0.0	21	0.2	21	0.2
36-72 Months	43,091	6,102	14.2	4	0.1	11	0.2	15	0.2
Total	87,595	19,843	22.7	4	0.0	32	0.2	36	0.2

Appendix A
Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in 2011

	Population of Children	Children Tested		Children with Blood Lead Level ≥ 10 $\mu\text{g/dL}$					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
				Number	Percent	Number	Percent	Number	Percent
Prince George's County									
0-35 Months	41,573	12,588	30.3	1	0.0	25	0.2	26	0.2
36-72 Months	38,238	7,084	18.5	1	0.0	12	0.2	13	0.2
Total	79,810	19,672	24.6	2	0.0	37	0.2	39	0.2
Queen Anne's County									
0-35 Months	1,851	366	19.8	0	0.0	2	0.5	2	0.5
36-72 Months	1,947	109	5.6	0	0.0	0	0.0	0	0.0
Total	3,798	475	12.5	0	0.0	2	0.4	2	0.4
Saint Mary's County									
0-35 Months	5,195	1,334	25.7	0	0.0	0	0.0	0	0.0
36-72 Months	5,232	268	5.1	0	0.0	0	0.0	0	0.0
Total	10,427	1,602	15.4	0	0.0	0	0.0	0	0.0
Somerset County									
0-35 Months	918	416	45.3	1	0.2	1	0.2	2	0.5
36-72 Months	824	133	16.1	0	0.0	0	0.0	0	0.0
Total	1,742	549	31.5	1	0.2	1	0.2	2	0.4
Talbot County									
0-35 Months	1,320	555	42.1	1	0.2	3	0.5	4	0.7
36-72 Months	1,281	100	7.8	0	0.0	0	0.0	0	0.0
Total	2,600	655	25.2	1	0.2	3	0.5	4	0.6
Washington County									
0-35 Months	6,226	1,798	28.9	2	0.1	8	0.4	10	0.6
36-72 Months	6,236	893	14.3	0	0.0	2	0.2	2	0.2
Total	12,462	2691	21.6	2	0.1	10	0.4	12	0.4
Wicomico County									
0-35 Months	4,347	1,705	39.2	0	0.0	3	0.2	3	0.2
36-72 Months	4,081	510	12.5	1	0.2	1	0.2	2	0.4
Total	8,427	2,215	26.3	1	0.0	4	0.2	5	0.2
Worcester County									
0-35 Months	1,620	677	41.8	0	0.0	1	0.1	1	0.1
36-72 Months	1,562	200	12.8	0	0.0	1	0.5	1	0.5
Total	3,182	877	27.6	0	0.0	2	0.2	2	0.2

Appendix A
Blood Lead Testing of Children 0-72 Months by Major Age Group and Jurisdiction in 2011

	Population of Children	Children Tested		Children with Blood Lead Level ≥ 10 $\mu\text{g/dL}$					
				Old Cases		New (Incident) Cases		Total (Prevalent) Cases	
				Number	Percent	Number	Percent	Number	Percent
County Unknown									
0-35 Months		2		0		0		0	
36-72 Months		2		0		0		0	
Total		4		0		0		0	
Statewide									
0-35 Months	255,333	77,756	30.5	59	0.1	268	0.3	327	0.4
36-72 Months	245,369	31,778	13.0	51	0.2	74	0.2	125	0.4
Total	500,702	109,534	21.9	110	0.1	342	0.3	452	0.4

Appendix B
Blood Lead Testing of Children 0-72 Months: 2004-2011

Calendar Year		Population	Blood Lead Tests		BLL \geq 10 μ g/dL		Lead Poisoning	
			Number	Percent	Number	Percent	Number	Percent
2004								
	Baltimore City	52,796	18,970	35.9	1183	6.2	147	0.8
	Counties	395,310	83,002	21.0	573	0.7	83	0.1
	County Unknown		3,577		55			
	Statewide	448,106	105,549	23.6	1,811	1.7	230	0.2
2005					<u>Prevalent cases</u>		<u>Incident cases</u>	
	Baltimore City	53,626	17,943	33.5	854	4.8	534	3.0
	Counties	401,888	80,848	20.1	463	0.6	382	0.5
	County Unknown		357		14		0	
	Statewide	455,514	99,148	21.8	1,331	1.3	916	0.9
2006								
	Baltimore City	54,547	18,363	33.7	843	4.6	573	3.1
	Counties	408,784	84,611	20.7	431	0.5	363	0.4
	County Unknown		199		21		20	
	Statewide	463,331	102,974	22.2	1,274	1.2	936	0.9
2007								
	Baltimore City	55,142	17,670	32.0	624	3.5	435	2.5
	Counties	413,248	87,760	21.2	267	0.3	218	0.2
	County Unknown		278		1		1	
	Statewide	468,390	105,708	22.6	892	0.8	654	0.6
2008								
	Baltimore City	55,959	18,622	33.3	468	2.5	302	1.6
	Counties	418,941	87,830	21.0	245	0.3	187	0.2
	County Unknown		69		0		0	
	Statewide	474,900	106,452	22.4	713	0.7	489	0.5
2009								
	Baltimore City	56,431	19,043	33.7	347	1.8	214	1.1
	Counties	422,488	88,368	20.9	206	0.2	165	0.1
	County Unknown		5					
	Statewide	468,390	107,416	22.4	553	0.5	379	0.4
2010								
	Baltimore City	57,937	19,702	34.0	314	1.6	229	1.2
	Counties	433,661	94,650	21.8	217	0.2	170	0.2
	County Unknown		477		0		0	0.0
	Statewide	491,598	114,829	23.4	531	0.5	399	0.3
2011								
	Baltimore City	55,681	19,049	34.2	258	1.4	182	1.0
	Counties	445,021	90,481	20.3	194	0.2	160	0.2
	County Unknown		4		0		0	
	Statewide	500,702	109,534	21.9	452	0.4	342	0.4

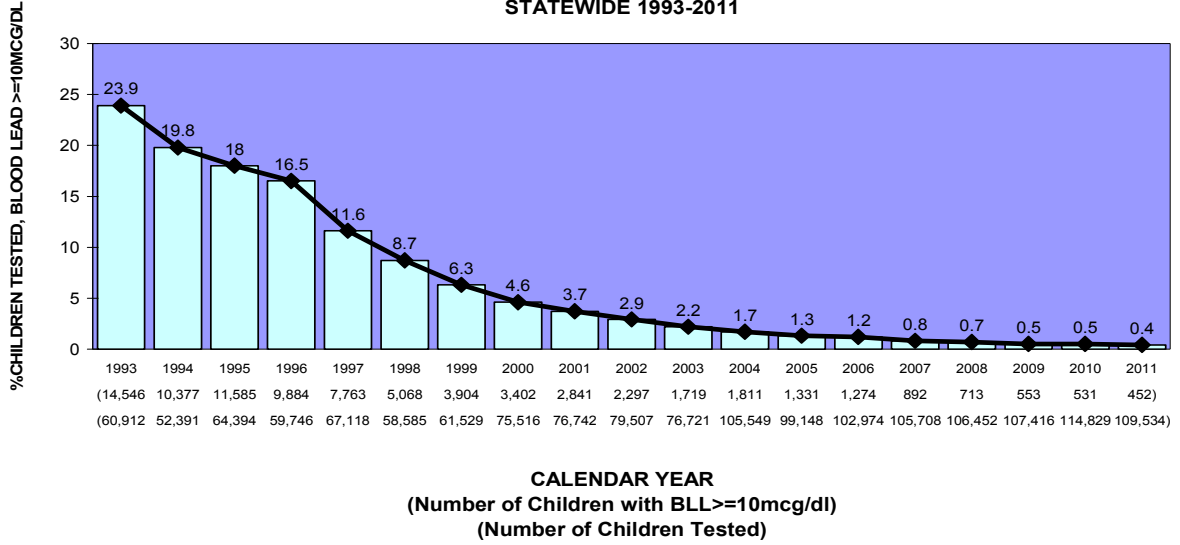
Appendix C

Children with the First Blood Lead Level of 5-9 µg/dL in 2011

Children 0-72 Months Tested for Lead and Had the First Blood Lead Level 5-9 µg/dL in 2011			
	Sample Type		
County	Capillary*	Venous	Total
Allegany	47	14	61
Anne Arundel	30	37	67
Baltimore	129	120	249
Baltimore City	309	641	950
Calvert	6	7	13
Caroline	5	8	13
Carroll	5	20	25
Cecil	12	4	16
Charles	4	10	14
Dorchester	3	6	9
Frederick	8	30	38
Garrett	3	6	9
Harford	13	11	24
Howard	10	7	17
Kent	3	4	7
Montgomery	73	85	158
Prince George's	74	147	221
Queen Anne's	4	1	5
Saint Mary's	17	2	19
Somerset	0	10	10
Talbot	6	6	12
Washington	21	120	141
Wicomico	11	31	42
Worcester	1	7	8
County Unknown	0	1	1
Statewide	794	1,335	2,129
* Sample types unknown were counted as capillary			
Note: If a child ever tested for lead and had a blood lead level ≥5 µg/dL before 2011 or a blood lead level ≥10 µg/dL in 2011 is not included in this table.			

Appendix D

MARYLAND DEPARTMENT OF THE ENVIRONMENT CHILDHOOD BLOOD LEAD SURVEILLANCE STATEWIDE 1993-2011



MARYLAND DEPARTMENT OF THE ENVIRONMENT CHILDHOOD BLOOD LEAD SURVEILLANCE BALTIMORE CITY 1993-2011

